Today's Topics:
                    Costas Loop in Digital Form
            Ham Radio programs for the MacIntosh computer
            Military aircraft callsigns...Eugene Balinski
                       needed circuit to read cw
                        Ten Tec Corsair Inquiry
                 The End of Amateur Radio {Part 1/3}

Date: 20 Nov 89 19:48:29 GMT
From: idacrd!mac@princeton.edu (Robert McGwier)
Subject: Costas Loop in Digital Form

>From article <4858@abaa.UUCP>, by esker@abaa.uucp (Lawrence Esker):
> In article <2628@radio.oakhill.UUCP> charlie@oakhill.UUCP (Charlie Thompson)
writes:
>>I am looking for software implementations of a Costas Loop. I
>>have the original old paper written by the man himself but I
>>was looking for someone who might have done this in software
>>such as DSP code for one of the DSP's or even C for that matter.
>>-Charlie Thompson
>
> I've found that the Costas loop is not very good compared to some later
> developments. It was also impossible to convert to a digital form (as hardware
> counters, multipliers, etc.) Get the book Phaselock Techniques by Floyd M.
> Gardner and read chapter 11. It presents several evolved forms, such as the
>

This answer is completely and totally wrong that I just can't resist jumping
in. In the future, please keep your ignorance to yourself. As a matter
of fact, <I> HAVE implemented a Costas loop for BPSK and QPSK on the
DSP56001 and in 'C'. It performs (MEASURED) within 0.1 dB of THEORETICAL
BECAUSE the things you mentioned counters, multipliers, filters, etc.
WHICH ARE NEVER perfect in analog hardware, ARE nearly perfect in digital form.
I apologize for the tone but your statements are just plain completely
false. The transition followers, and other forms of hard limiting you
mentioned, are decidedly INFERIOR. This is called Van Vleck's law about
the approximately 2 dB (in a perfect implementation) loss in output SNR
caused by the limiting process (which is an information theoretic result
which follows intuitively since you are throwing away all the information
except when zero crossings occur).

On the other hand, you have given EXCELLENT advice in reading material.
It is outdated when considering all that has been done in DSP, but it
is still excellent reading. I find myself returning to it over and over.
I recently wrote a sampled-derivative clock recovery algorithmn in C and
DSP56001 assembler for several modems, the details of the ANALOG
implementation are in Gardner, and have been used suboptimally by
WA4DSY in the 56 KBPS MSK modem. Another, slightly more modern treatment
of modems and other interesting topics can be found in the book Digital
Communications by Edward Lee and ?. Messerschmidt. It's treatment of
PLL's carrier tracking, clock recovery, Trellis encoding decoding (Viterbi)
are good and the references are excellent. Charlie, you know how to
contact me, you can get details in readable "C" from me on the Costas
Loop and an even better algorithm based on an Arctangent phase error
detector (BETTER because it CAN BE DONE IN DIGITAL FORM; NEXT TO IMPOSSIBLE
IN ANALOG form). I will talk to my partners about giving out the
DSP56001 code, and TMS320C25 code for doing the Costa's Loop and make
it freely available somehow if we all agree.

Bob McGwier N4HY
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    My opinions are my own no matter | Robert W. McGwier, N4HY
    who I work for! ;-) | CCR, AMSAT, etc.

Date: 20 Nov 89 19:29:57 GMT
From: winter@apple.com (Patty Winter)
Subject: Ham Radio programs for the MacIntosh computer

In article <28984@genrad.UUCP> dls@genrad.com (Diana L. Syriac) writes:
>I have received many requests for info concerning some of the Ham Radio
>programs I have. So here's what I have:
>
>[items deleted]
>
>KA9Q Terminal Internet Protocal Packet
>etc, etc, etc.
>   from Kinetic Designs

Just a note that the "official" (translation: the KA9Q project is
low on fiats, so this is as official as we get :-)) source for updates
to the Macintosh version of Phil's software is:

        Doug Thom N6OYU
        1405 Graywood Drive

San Jose, CA 95129

        (He's also thom@apple.com)

The programming on this version is being coordinated (and mostly done)
in this area, and Doug always has the latest release. So if you're interested
in amateur TCP/IP, I'd strongly recommend that you get on Doug's mailing
list so you'll know about the latest updates directly from the source.

We also now have a European "distributor." :-) Write to me for details.

73,
Patty

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Patty Winter N6BIS   INTERNET: winter@apple.com
AMPR.ORG: [44.4.0.44]   UUCP: {decwrl,nsc,sun}!apple!winter
****

Date: 20 Nov 89 18:39:32 GMT
From: agate!shelby!neon!kaufman@ucbvax.Berkeley.EDU (Marc T. Kaufman)
Subject: Military aircraft callsigns...Eugene Balinski

In article <8387.256772D9@stjhmc.fidonet.org> Jim.Grubs@f1.n234.z1.fidonet.org
(Jim Grubs) writes:
>> From: kaufman@Neon.Stanford.EDU (Marc T. Kaufman)

> > Wait a minute! The Air Force transmissions are deliberately sent
> > unscrambled
> > because we have an agreement with the Russians that normal traffic will
> > be sent
> > unscrambled so that each side can tell that there is nothing nefarious
> > afoot.

>Wrong! For example, ALL messages on AUTODIN are encrypted for the express
purpose of denying any potential adversary the knowledge that any messages are
>more imprtant than the others.

You obviously have never listened to the transmissions in question. The SAC
air frequencies (Giant Talk) are NOT encrypted most of the time.

- > Are you telling me that it is OK for the Russians to listen to SAC, but
- > NOT OK
- > for Americans to listen to SAC?

>It's not OK for either.

Right. Well, you get the Russians to stop, then maybe I'll stop.

- > When I was a kid, we had the Communications Act of 1934, which said I
- > could
- > listen to ANYTHING, so long as I didn't use it for commercial gain. I'm
- > certainly not going to trust YOU to decide what I can listen to!

>You interpretation of the Communications Act is erroneous. The ECPA became
>necessary because electronic Peeping Toms abused the privacy portions of the
>CommAct.

Your interpretation of MY interpretation is erroneous. The act meant JUST what
it said: You can (could) listen to ANYTHING, but you can't make commercial
gain of it. As I remember, the question was discussed in my study text for
the 1st Class Radiotelephone license. The ECPA was sponsored (IMHO) by drug
dealers who wanted to be able to conduct business over cellular phones,
but be protected from arrest and prosecution by eavesdropping police.

For communication that MUST be secure, encryption devices are readily
available. The presumption is, then, that plain text transmissions do not fall
into the category of MUST be secure.

>You shouldn't have to trust me. I'm not involved. It's the message sender's
>right to say "This is none of your business." This right is protected by the
>constitution and laws of the United States.

Oh? Just where in the constitution does it say that? If you choose to use
a message sending medium that is inherently non-selective, such as a billboard,
what right do you have to tell me not to read it? And do you also have the
right to tell me not to listen to, say, Radio Moscow? or Voice of America?

Facists ALWAYS believe that THEY are the keepers of the one TRUE WORD.

Marc Kaufman (kaufman@Neon.stanford.edu)

Date: 20 Nov 89 20:35:13 GMT
From: medin@cod.nosc.mil (Ted Medin)
Subject: needed circuit to read cw

 Got the pc sending cw via the serial port driving the key now i need a
circuit to read cw and toggle the serial port so the pc can read cw alos.
Any leads appeciated. Yes i know a tnc would do it all but building your own
is part of ham radio right.

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  73,ted
  n6trf


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Date: Mon, 20 Nov 89 15:16:42 EST
From: Michael_Edelman%Wayne-MTS@um.cc.umich.edu
Subject: Ten Tec Corsair Inquiry

A week ago I posted an inquiry asking for advice about the Ten-Tec
Omni-D. Wel,, they shipped it and IT'S AN OMNI_A!!! ARRGGGHHH!!!

Okay, I'm better now.

I'm shipping the Omni back from whence it came, and have located
instead an excellent deal on a Corsair II- less than half the current
retail price, too. Thus the Omni question is amended for Corsairs:

 -- difficulties?
 -- good mods?
 -- operating hints?
 -- service hints?
 &tc.?

      73 de ke8yy
 Mike Edelman
 Wayne State University / 5925 Woodward / Detroit, MI 48202
 Michael_Edelman@um.cc.umich.edu   (reliable)
 Michael_Edelman%Wayne-Mts@um.cc.umich.edu (direct)
 MEDELMAN@WAYNEST1 / 1-313-577-0742 / fax: 1-313-577-5500


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Date: 20 Nov 89 19:20:52 GMT
From: agate!shelby!portia!jessica.Stanford.EDU!paulf@ucbvax.Berkeley.EDU  (Paul
Flaherty)
Subject: The End of Amateur Radio {Part 1/3}

>From "A History of the 20th Century" by Peter B. Long (c) 2031:

Chapter 23: The Hobbyist Mentality

AMATEUR RADIO

Amateur Radio was a fascinating pastime pursured by several thousand
enthusiasts worldwide.  Beginning at the dawn of radio, the hobby lived
on a legal limbo, which ultimately doomed it.  The story of "ham" radio's
beginning is well chronicled elsewhere, and not nearly as interesting as it's
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demise.

Ham radio thrived in the United States, until the 1970s. At this time, the impoverishment of American scientific education began to take its toll. Anti - technological movements thrived in the period, and the movement had its most dramatic effects on youth, who shied away from displaying interest in technology. As a result, the amateur community began to age. Without significant peer involvement, the aging effect began to snowball, as adults lost their ability to relate to those younger than themselves. The effect went unnoticed until the late 1980s. Curiously, however, little if any effort went into regenerating interest amongst the young. Partly owing to self interest, the organizations of the day instead focused on drawing from their own age group; ads touting ham radio as "America's great Retirement Hobby", and displaying elderly members exclusively were common.

At the same time, telecommunications technology was changing rapidly. The advent of fiber optics and the worldwide BISDN enabled anyone with a steady income to talk to anyone else in the world. A series of UN treaties eventually recognized telecommunications as a fundamental human right. As forseen by then - futurist Arthur C. Clarke, International Long Distance became a subsidy of the UN. The ability to make a free phone call anywhere in the world had a dramatic political impact (see Ch. 2), but it sounded the death knell for what remained of Amateur Radio in 2016. It could well be argued, however, that by that time, the hobby was effectively dissolved, due to the Kennedy act of 1991.

Almost from the beginning, Amateur Radio existed as a bastard child of the telecommunications bastion. The hobby used electromagnetic spectrum, a valuable and limited resource. Justification for wasting bandwidth on discussions of liver transplants, hemhorroids, and bad marriages was hard to come by, but usually made in one of three forms. First, that amateur radio somehow fostered international goodwill. Second, that the hobby marginally contributed to the state of the art in telecommunications. And finally, that amateurs assisted in emergency communications.

Several incidents in the late 1980s debunked the first myth. As hams fought amongst themselves for more and more of a gradually diminishing spectrum allocation, the fights would often break out on the air. In any event, the positive effect of having persons from different countries communicate with each other was minimal, especially when compared with the bloom of international long distance soon afterward.

Although ham radio did make important contributions to telecommunications in the early days, these were quickly surpassed by commercial ventures. Those few amateurs who were still carrying out experiments by the late 80's often met frustration and lack of appreciation for their efforts. An attempt to build a nationwide "packet radio" network broke down, after squabbles about usage of the network virtually consumed the available bandwidth. Most

experimenters quietly drifted away to other pursuts, notably UN sponsored
satellite telecom experiments for nations with reduced telecom needs.

The last remaining bastion of Amateur Radio, emergency communications, was
perhaps the only legitimate claim that the hobby had on several billion
dollars of spectrum. It was argued quite successfully that allowing hams to
"ragchew" constituted a form of testing a reserve of equipment for some
unforseen emergency. Here again, the pace of technology eventually overcame
this need; cellular mobiletelephones and portable satcom systems enabled
emergency personnel to obtain vital communications, without the surliness that
often accompanied amateur operators.

As a last ditch effort to save the hobby, organizations endorsed a "no - code"
license. Prior to that time, hams were required by law to learn Morse Code,
a primitive aural digital communications technique. Even when the requirement
became technologically arcane (the computing systems of the day were capable
of techniques which were superior by several orders of magnitude), it was
demanded by hard - liners, who, although frustrated with the technique
themselves, demanded that it be a stumbling block (a classic example of
20th century cognitive dissonance). The repeal had some effect, but the
result was not nearly as dramatic as would have been required.

The end was now very near.

{to be continued}
-=Paul Flaherty, N9FZX | "I asked for a dissertation topic, and for my
->paulf@shasta.Stanford.EDU | sins, they gave me one."

End of INFO-HAMS Digest V89 Issue #908
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